

511, 858

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

14 OCT 2004

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
13 November 2003 (13.11.2003)

PCT

(10) International Publication Number
WO 03/094293 A1(51) International Patent Classification⁷: H01Q 13/16,
13/10, 1/38[IR/US]; 2203 Cram Place #3, Ann Arbor, MI 48105 (US).
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(21) International Application Number: PCT/US02/13821

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(22) International Filing Date: 1 May 2002 (01.05.2002)

(81) Designated States (national): CA, US.

(25) Filing Language: English

Published:
— with international search report

(26) Publication Language: English

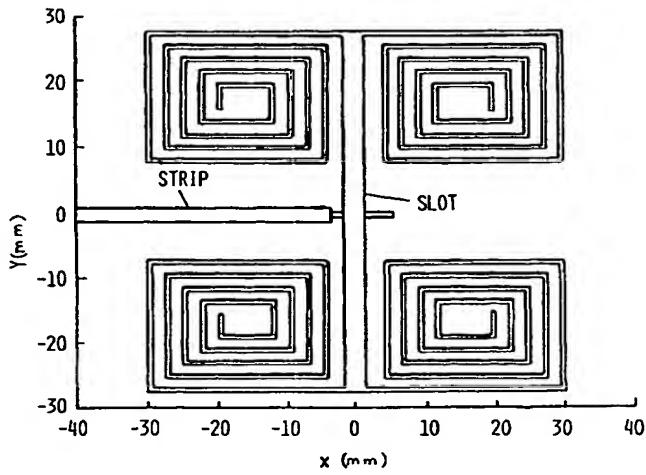
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(54) Title: SLOT ANTENNA



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(57) Abstract: The present invention disclosed design aspects and the measured results of a miniaturized resonant narrow slot antenna. The resonant narrow slot radiating elements have a planar geometry and are capable of transmitting vertical polarization when placed nearly horizontal. A resonant narrow slot antenna according to the present invention simplifies impedance matching. Slot dipoles can be excited by a microstrip line and can be matched to arbitrary line impedances by moving the feed point along the slot. Antenna miniaturization can be achieved by using a high permittivity or permeability substrate and superstrate materials and/or using an appropriate antenna topology. Miniaturization is achieved through providing a unique geometry for a resonant narrow slot antenna. A very efficient radiating element is provided. With the virtual enforcement of the required boundary condition at the end of a slot antenna, the area occupied by the resonant antenna can be reduced. To achieve the required virtual boundary conditions, the two short-circuit at the end of resonant slot are replaced by some reactive boundary conditions, including inductive or capacitive boundary conditions, including inductive or capacitive loadings.